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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
WASSUM, LUKE S	
ART UNIT	**PAPER NUMBER**
2167	

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

9

Office Action Summary	Application No.	Applicant(s)
	10/800,109	MERCIER ET AL.
	Examiner	Art Unit
	Luke S. Wassum	2167

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *23-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *23-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Applicants' amendment, filed 28 March 2006, has been received, entered into the record, and considered.

2. As a result of the amendment, claims 23 and 40 have been amended. Claims 23-45 remain pending in the application.

The Invention

3. The claimed invention is an apparatus providing coherent data copying operations where data replication is controlled by a source storage controller directly to a destination controller and managed by a remote application.

Priority

4. The examiner acknowledges the Applicants' claim to domestic priority under 35 U.S.C. § 120, as a continuation of application 09/375,819, filed 16 August 1999.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary

skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 23-26, 28, 29, 31-34, 36, 37, 39-41 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ohran et al.** (U.S. Patent 5,649,152) in view of **Hitz et al.** ("File System Design for an NFS File Server Applicance") in view of **Meyer** (U.S. Patent 5,867,733).

9. Regarding claim 23, **Ohran et al.** teaches a system substantially as claimed, comprising:

a) snapshot logic (see Abstract, disclosing that the reference is a method for providing a static snapshot; see also col. 1, lines 15-18);

b) copy logic (see disclosure that blocks are copied into the preservation memory when they are going to be changed by a write operation, col. 2, lines 55-58; see also col. 5, lines 48-53; see also step 212 in Figure 2);

c) an internal cache (see disclosure of block association memory, element 108 of Figure 1; see also col. 4, lines 51-56, disclosing that the block association memory may be a portion of the RAM of digital computer 102);

d) the system being operable to communicate with a replication manager to receive a snapshot command issued by the replication manager, the snapshot command specifying a range of data bytes of a source volume (see disclosure of a user indicating that a static image [i.e., snapshot] of the mass storage system is desired, said indication being analogous to the claimed snapshot command, col. 4, lines 14-24; note also the disclosure that mass storage system 104 can be any writable block-addressable storage system, such as one or more disks or a partition of a disk, a partition being a fixed portion of a disk, col. 3, lines 50-56; see also col. 5, lines 23-41);

e) the system being operable to communicate with the replication manager to receive a copy command specifying the source volume and target volume (see disclosure of the copy command, col. 5, lines 48-53);

f) the system being operable to receive a write command specifying the source volume (see disclosure of the intercepting of write commands to the source volume, col. 4, lines 35-41);

g) the snapshot logic being operable, in response to the snapshot command, to take a snapshot of the range, the snapshot including a snapshot map and snapshot data, the snapshot map being stored by the snapshot logic in the internal cache and the snapshot data being stored by the snapshot logic in a snapshot volume (see col. 4, lines 20-35; see also disclosure that preservation memory [i.e. the snapshot data] can be an area of memory, one or more disks, a partition of a disk, or a file stored on a disk, col. 3, line 66 through col. 4, line 1; see also disclosure that block association memory [i.e. the snapshot map] can be stored as a portion of the RAM of digital computer 102, col. 4, lines 51-56); and

h) the copy logic being operable in response to receiving the copy command to generate and send one or more storage device commands to one or more storage devices for the source and target volumes to copy data from the source volume to the target volume, the copy logic using the snapshot map and the snapshot data to maintain coherency of the copied data (see disclosure in the Abstract; see detailed disclosure of this process at col. 5, line 48 through col. 6, line 40).

Ohran et al. does not explicitly teach a system wherein the snapshot operations are carried out in and managed by a storage device controller.

Hitz et al., however, teaches a system wherein the snapshot operations are carried out in and managed by a storage device controller (see disclosure in both the Abstract (page 4) and the Introduction (page 5) that the system is a storage device controller managing snapshots).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate snapshot functionality in a storage device controller, since this would off-load the processing load for managing snapshots (as well as management of the file system itself) from the server to the storage device controller, thus improving performance on the server itself.

Neither **Ohran et al.** nor **Hitz et al.** explicitly teaches a system wherein the data is directly transferred between the source and destination storage devices without traversing a file server.

Meyer, however, teaches teach a system wherein the data is directly transferred between the source and destination storage devices without traversing a file server (see disclosure that data is transferred directly from one mass storage device to another storage device via the EIDE controller, col. 3, line 60 through col. 4, line 13).

It would have been obvious to one of ordinary skill in the art at the time of the invention to transfer data directly from the source device to the destination device, since this would allow for the direct movement of blocks of data between storage devices without processor intervention and without using I/O or processor bus bandwidth (see col. 4, lines 45-57).

10. Regarding claim 31, **Ohran et al.** teaches a method substantially as claimed, comprising:

a) receiving a snapshot command issued by a replication manager, the snapshot command specifying a range of data bytes of a source volume (see disclosure of a user indicating that a static image [i.e., snapshot] of the mass storage system is desired, said indication

being analogous to the claimed snapshot command, col. 4, lines 14-24; note also the disclosure that mass storage system 104 can be any writable block-addressable storage system, such as one or more disks or a partition of a disk, a partition being a fixed portion of a disk, col. 3, lines 50-56; see also col. 5, lines 23-41);

b) in response to receiving the snapshot command, the system taking a snapshot of the range specified using device control commands to control one or more devices on which the source is stored, the snapshot including a snapshot map and snapshot data, and storing the snapshot map and the snapshot data in a cache internal to the system and a snapshot volume, respectively (see col. 4, lines 20-35; see also disclosure that preservation memory [i.e. the snapshot data] can be an area of memory, one or more disks, a partition of a disk, or a file stored on a disk, col. 3, line 66 through col. 4, line 1; see also disclosure that block association memory [i.e. the snapshot map] can be stored as a portion of the RAM of digital computer 102, col. 4, lines 51-56);

c) receiving a copy command from the replication manager, the copy command specifying a copy operation from the source volume to a target volume (see disclosure of the copy command, col. 5, lines 48-53); and

d) in response to receiving the copy and write commands, the system generating and sending storage device commands to one or more storage devices of the source and target volumes to copy data from the source volume to the target volume using the snapshot map and snapshot data to maintain coherency of the copied data (see disclosure in the Abstract; see detailed disclosure of this process at col. 5, line 48 through col. 6, line 40).

Ohran et al. does not explicitly teach a method wherein the snapshot operations are carried out in and managed by a storage device controller.

Hitz et al., however, teaches a method wherein the snapshot operations are carried out in and managed by a storage device controller (see disclosure in both the Abstract (page 4) and the Introduction (page 5) that the system is a storage device controller managing snapshots).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate snapshot functionality in a storage device controller, since this would off-load the processing load for managing snapshots (as well as management of the file system itself) from the server to the storage device controller, thus improving performance on the server itself.

Neither **Ohran et al.** nor **Hitz et al.** explicitly teaches a method wherein the data is directly transferred between the source and destination storage devices without traversing a file server.

Meyer, however, teaches teach a method wherein the data is directly transferred between the source and destination storage devices without traversing a file server (see disclosure that data is transferred directly from one mass storage device to another storage device via the EIDE controller, col. 3, line 60 through col. 4, line 13).

It would have been obvious to one of ordinary skill in the art at the time of the invention to transfer data directly from the source device to the destination device, since this would allow for the

direct movement of blocks of data between storage devices without processor intervention and without using I/O or processor bus bandwidth (see col. 4, lines 45-57).

11. Regarding claim 39, **Ohran et al.** teaches a computer-implemented method substantially as claimed, comprising:

a) using a remote application to manage a source storage device controller and a destination storage device controller (see col. 3, lines 43-59);

b) generating a snapshot version for each block of the source data object changed by one or more write operations to the block during the course of a copy operation (see disclosure in the Abstract; see detailed disclosure of this process at col. 5, line 48 through col. 6, line 40); and

c) copying each block of the source data object to a corresponding block in the destination data object in the absence of the snapshot version of the block and otherwise copying the snapshot version of the source data object block to the corresponding block in the destination data object, wherein data is transferred between the source and destination storage device controllers (see disclosure in the Abstract; see detailed disclosure of this process at col. 5, line 48 through col. 6, line 40).

Ohran et al. does not explicitly teach a method wherein the snapshot operations are carried out in and managed by a storage device controller, thus maintaining coherency without requiring any file system to maintain a snapshot map.

Hitz et al., however, teaches a method wherein the snapshot operations are carried out in and managed by a storage device controller, thus maintaining coherency without requiring any file system to maintain a snapshot map (see disclosure in both the Abstract (page 4) and the Introduction (page 5) that the system is a storage device controller managing snapshots).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate snapshot functionality in a storage device controller, since this would off-load the processing load for managing snapshots (as well as management of the file system itself) from the server to the storage device controller, thus improving performance on the server itself.

Neither **Ohran et al.** nor **Hitz et al.** explicitly teaches a method wherein the data is directly transferred between the source and destination storage devices without traversing a file server.

Meyer, however, teaches teach a method wherein the data is directly transferred between the source and destination storage devices without traversing a file server (see disclosure that data is transferred directly from one mass storage device to another storage device via the EIDE controller, col. 3, line 60 through col. 4, line 13).

It would have been obvious to one of ordinary skill in the art at the time of the invention to transfer data directly from the source device to the destination device, since this would allow for the direct movement of blocks of data between storage devices without processor intervention and without using I/O or processor bus bandwidth (see col. 4, lines 45-57).

12. Regarding claim 40, **Ohran et al.** teaches a system substantially as claimed, comprising:

a) a replication manager that is operable to issue a snapshot command (see disclosure of a user indicating that a static image [i.e., snapshot] of the mass storage system is desired, said indication being analogous to the claimed snapshot command, col. 4, lines 14-24; note also the disclosure that mass storage system 104 can be any writable block-addressable storage system, such as one or more disks or a partition of a disk, a partition being a fixed portion of a disk, col. 3, lines 50-56; see also col. 5, lines 23-41);

b) a storage device controller that is operable to:

i) communicate with the replication manager to receive the snapshot command specifying a range data bytes of the source volume (see disclosure of a user indicating that a static image [i.e., snapshot] of the mass storage system is desired, said indication being analogous to the claimed snapshot command, col. 4, lines 14-24; note also the disclosure that mass storage system 104 can be any writable block-addressable storage system, such as one or more disks or a partition of a disk, a partition being a fixed portion of a disk, col. 3, lines 50-56; see also col. 5, lines 23-41); and

ii) receive a copy command specifying the source volume and target volume (see disclosure of the copy command, col. 5, lines 48-53); wherein

c) the controller is operable to receive a write command specifying the source volume (see disclosure of the intercepting of write commands to the source volume, col. 4, lines 35-41);

d) the controller is operable, in response to receiving the snapshot command, to take a snapshot of the range, the snapshot including a snapshot map and snapshot data, the snapshot map being stored in a cache and the snapshot data being stored in a snapshot volume (see col. 4, lines 20-35; see also disclosure that preservation memory [i.e. the snapshot data] can be an area of memory, one or more disks, a partition of a disk, or a file stored on a disk, col. 3, line 66 through col. 4, line 1; see also disclosure that block association memory [i.e. the snapshot map] can be stored as a portion of the RAM of digital computer 102, col. 4, lines 51-56); and

e) the controller is operable, in response to receiving the copy command, to generate and send one or more storage device commands to one or more storage devices for the source and target volumes to copy data from the source volume to the target volume, the copy logic using the snapshot map and the snapshot data to maintain coherency of the copied data (see disclosure in the Abstract; see detailed disclosure of this process at col. 5, line 48 through col. 6, line 40).

Ohran et al. does not explicitly teach a system wherein the snapshot operations are carried out in and managed by a storage device controller.

Hitz et al., however, teaches a system wherein the snapshot operations are carried out in and managed by a storage device controller (see disclosure in both the Abstract (page 4) and the Introduction (page 5) that the system is a storage device controller managing snapshots).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate snapshot functionality in a storage device controller, since this would off-load the processing load for managing snapshots (as well as management of the file system itself) from the server to the storage device controller, thus improving performance on the server itself.

Neither **Ohran et al.** nor **Hitz et al.** explicitly teaches a system wherein the data is directly transferred between the source and destination storage devices without traversing a file server.

Meyer, however, teaches teach a system wherein the data is directly transferred between the source and destination storage devices without traversing a file server (see disclosure that data is transferred directly from one mass storage device to another storage device via the EIDE controller, col. 3, line 60 through col. 4, line 13).

It would have been obvious to one of ordinary skill in the art at the time of the invention to transfer data directly from the source device to the destination device, since this would allow for the direct movement of blocks of data between storage devices without processor intervention and without using I/O or processor bus bandwidth (see col. 4, lines 45-57).

13. Regarding claims 24 and 32, **Hitz et al.** additionally teaches a storage device controller and method wherein the storage device controller is a RAID controller (see section 1.0 <u>Introduction</u>, page 5, third paragraph).

14. Regarding claims 25 and 33, **Ohran et al.** additionally teaches a storage device controller and method wherein:

a) the range of the storage volume specified by the snapshot command is a first range, and the write command specifies a second range of data bytes of the source volume (see disclosure of a user indicating that a static image [i.e., snapshot] of the mass storage system is desired, said indication being analogous to the claimed snapshot command, col. 4, lines 14-24; note also the disclosure that mass storage system 104 can be any writable block-addressable storage system, such as one or more disks or a partition of a disk, a partition being a fixed portion of a disk, col. 3, lines 50-56; see also col. 5, lines 23-41; see also disclosure of the intercepting of write commands to the source volume, col. 4, lines 35-41); and

b) the controller is operable, in response to receiving the write command while the source volume is being copied to the target volume, to hold the write command in the cache, check if the first range overlaps with the second range and, if so, copy the second range from the source volume to the snapshot volume, update the snapshot map, and then allow the write command to write to the source volume (see disclosure in the Abstract; see detailed disclosure of this process at col. 5, line 48 through col. 6, line 40; see also flowchart illustrated in Figure 2).

15. Regarding claims 26 and 34, **Ohran et al.** additionally teaches a storage device controller and method wherein the replication manager is executed on a file server (see col. 6, lines 50-55).

16. Regarding claims 28, 36 and 41, **Ohran et al.** additionally teaches a storage device controller, system and method wherein the replication manager is operable to control multiple storage device controllers (see col. 6, lines 40-49).

17. Regarding claims 29 and 37, **Ohran et al.** additionally teaches a storage device controller and method wherein the one or more storage device commands include SCSI commands (see disclosure that the system includes a mass storage device that could be a SCSI device, col. 3, lines 60-65).

18. Regarding claim 45, **Ohran et al.** additionally teaches a storage device controller wherein a block size is specified so that fixed size blocks are written to the destination controller device (see col. 5, lines 23-41).

19. Claims 27 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ohran et al.** (U.S. Patent 5,649,152) in view of **Hitz et al.** ("File System Design for an NFS File Server Applicance") in view of **Meyer** (U.S. Patent 5,867,733) as applied to claims 23-26, 28, 29, 31-34, 36, 37, 39-41 and 45 above, and further in view of **Tawil** (U.S. Patent 6,421,723).

20. Regarding claims 27 and 35, **Ohran et al.**, **Hitz et al.** and **Meyer** teach a storage device controller and method substantially as claimed.

None of **Ohran et al.**, **Hitz et al.** nor **Meyer** explicitly teaches a storage device controller and method wherein the file server is connected to a storage area network switch and the file server communicates with the storage device controller through the storage area network switch.

Tawil, however, teaches the use of a storage area network (see col. 1, lines 30-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a storage area network, since they offer centralized storage of data for increased efficiency and data handling, and provide data access reliability and availability, unobtrusive capacity expansion, improved data backup and recovery, and performance that is competitive with local data storage (see col. 1, lines 30-36).

21. Claims 30 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ohran et al.** (U.S. Patent 5,649,152) in view of **Hitz et al.** ("File System Design for an NFS File Server Applicance") in view of **Meyer** (U.S. Patent 5,867,733) as applied to claims 23-26, 28, 29, 31-34, 36, 37, 39-41 and 45 above, and further in view of **Dulai et al.** (U.S. Patent 6,205,479).

22. Regarding claims 30 and 38, **Ohran et al.**, **Hitz et al.** and **Meyer** teach a storage device controller and method substantially as claimed.

None of **Ohran et al.**, **Hitz et al.** nor **Meyer** explicitly teaches a storage device controller and method wherein the controller is operable to send the one or more storage device commands by using one of an in-band protocol or an out-of-band protocol.

Dulai et al., however, teaches a storage device controller and method wherein the controller is operable to send the one or more storage device commands by using one of an in-band protocol or an out-of-band protocol (see disclosure of the use of an in-band protocol, claims 18 and 21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize an in-band protocol, since this allows the transmission of commands over a widely dispersed network where the use of an out-of-band protocol might be impractical.

23. Claims 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ohran et al.** (U.S. Patent 5,649,152) in view of **Hitz et al.** ("File System Design for an NFS File Server Applicance") in view of **Meyer** (U.S. Patent 5,867,733) as applied to claims 23-26, 28, 29, 31-34, 36, 37, 39-41 and 45 above, and further in view of **Simpson et al.** (U.S. Patent 6,128,306).

24. Regarding claims 42-44, **Ohran et al.**, **Hitz et al.** and **Meyer** teach a storage device controller and method substantially as claimed.

None of **Ohran et al.**, **Hitz et al.** nor **Meyer** explicitly teaches a storage device controller and method comprising a list of blocks to be copied which is reordered to optimize copy speed, wherein control data is inserted before and after the source data block, nor wherein the list is buffered.

Simpson et al., however, teaches a storage device controller and method comprising a list of blocks to be copied which is reordered to optimize copy speed (see col. 2, lines 15-18), wherein control data is inserted before and after the source data block (see col. 2, lines 5-9), and wherein the list is buffered (see col. 1, lines 55-58).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include prioritized buffering of output data, since this allows more flexible handling of outgoing data traffic, and furthermore since input/output buffering and prioritization and reordering of data in queues was well known in the art at the time of the invention.

Response to Arguments

25. Applicant's arguments filed 23 September 2005 have been fully considered but they are not persuasive.

26. Regarding the Applicants' argument that the **Ohran et al.** reference fails to teach a storage device controller, the examiner respectfully responds that, as stated in the rejection of record, the storage device controller is disclosed by the **Hitz et al.** reference.

One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

27. Regarding the Applicants' argument that the **Ohran et al.** reference fails to teach snapshot logic or copy logic, the examiner respectfully disagrees.

The Applicants argue that, in view of col. 4, lines 20-35, the **Ohran et al.** reference fails to teach snapshot logic or copy logic having the claimed functionality. The examiner respectfully responds that there are many more portions of the reference cited in the rejection of record, and that in view of the totality of these disclosures, the **Ohran et al.** reference discloses the claimed snapshot and copy logic, including the use of a snapshot map (embodied in the disclosed block association memory) and snapshot data (embodied in the disclosed preservation memory).

28. Regarding the Applicants' argument that the **Hitz et al.** reference fails to disclose the claimed storage device controller, the examiner respectfully disagrees.

As argued previously by the Applicants during prosecution of the parent application 09/375,819, in their response filed 30 June 2003, on page 7, "A file system is different from a storage device controller. File systems are computer-program products that process file system requests. In contrast, a storage device controller, as is well understood in the art, is a device that operates below the functional level at which a file system operates. For example, *a file system processes file system requests and deals with files whereas a storage device controller processes data block requests and deals with data blocks.*" (emphasis added).

The examiner's position during prosecution of these applications has been that the system disclosed by the **Hitz et al.** reference is analogous to the claimed storage device controller, since the system deals with data on the block level, below the level of a conventional file system (see, for instance, Figures 3 and 4; see also disclosure associated with Figure 3(c) on page 10, last paragraph, and disclosure associated with Figure 4 on page 11, last paragraph, both illustrating the fact that the system is managing data on the block level, since they disclose actions taken when a disk block [as opposed to a file] is modified).

The examiner maintains his position that the system disclosed in the **Hitz et al.** reference is analogous to the claimed storage device controller.

29. Regarding the Applicants' argument that the **Meyer et al.** reference fails to disclose all of the features of the claimed copy logic, the examiner respectfully responds that these features are disclosed by the other references, as stated in the rejection of record. The **Meyer et al.** reference is relied upon merely for its disclosure that data can be copied directly from one mass storage device, such as a hard disk drive, to another storage device, without processor [i.e., file server] intervention.

One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

30. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luke S. Wassum whose telephone number is 571-272-4119. The examiner can normally be reached on Monday-Friday 8:30-5:30, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

In addition, INFORMAL or DRAFT communications may be faxed directly to the examiner at 571-273-4119. Such communications must be clearly marked as INFORMAL, DRAFT or UNOFFICIAL.

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